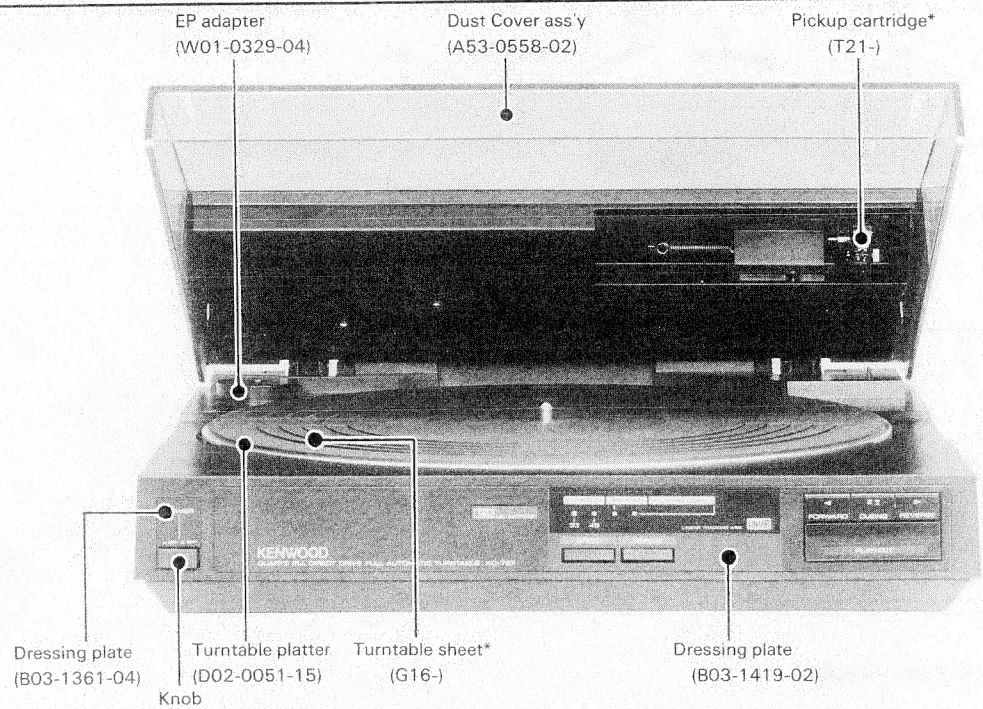
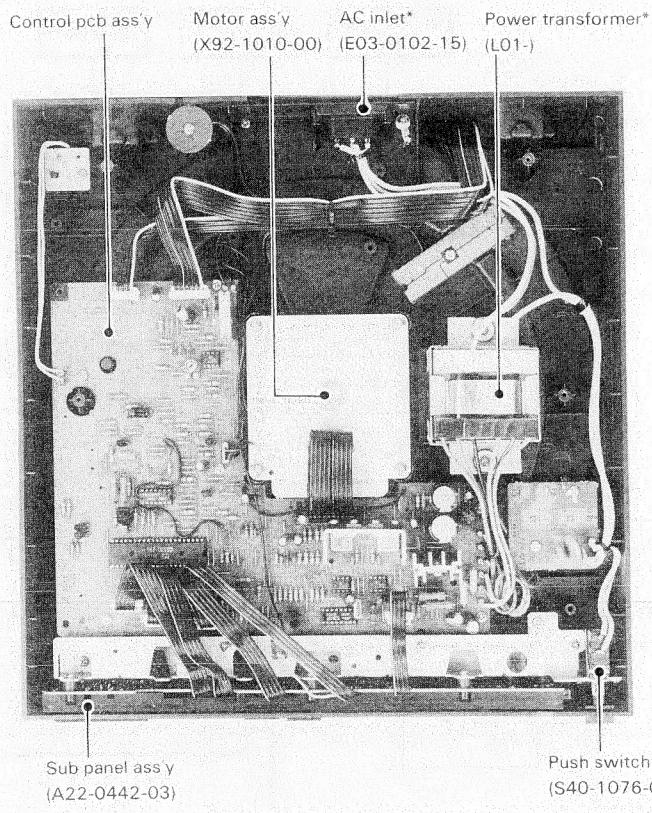
SERVICE MANUAL

KENWOOD

KD-727

FULL AUTOMATIC TURNTABLE





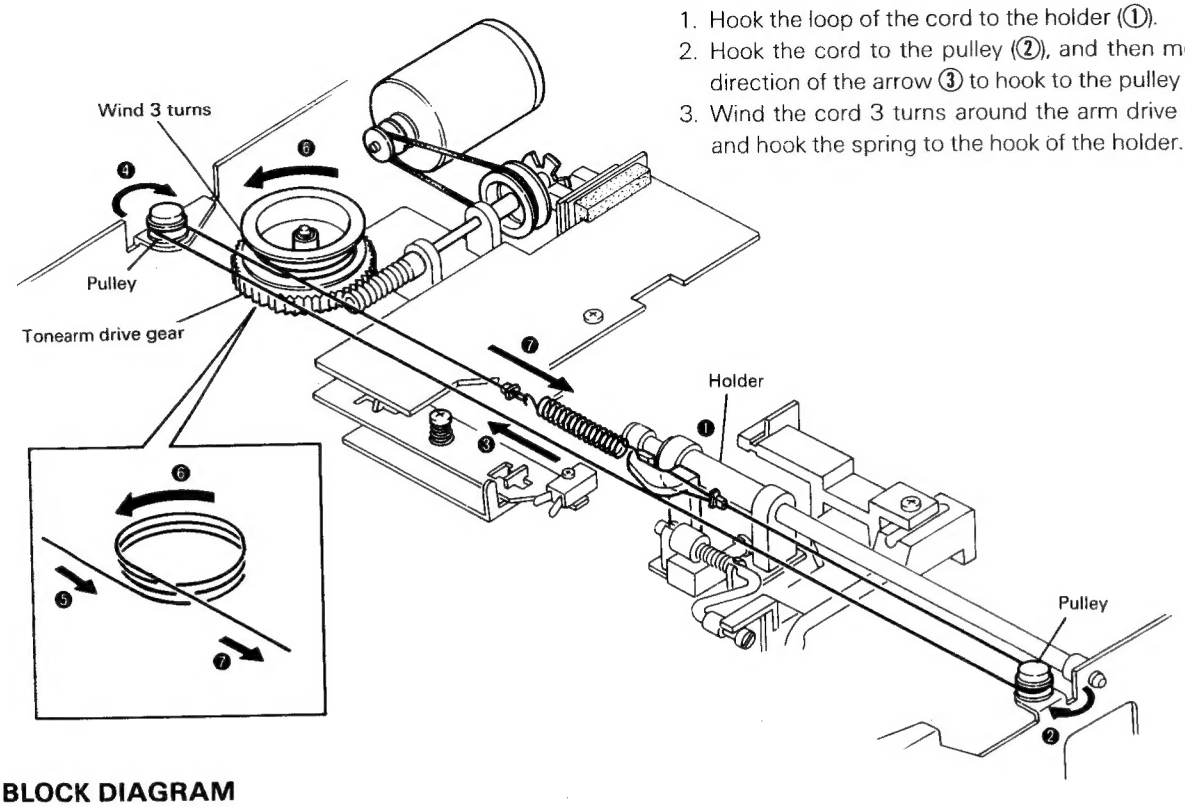
Caution: On exploded view, Parts with the exploded numbers larger than 700 are not supplied.

* Refer to Parts list on page 9.

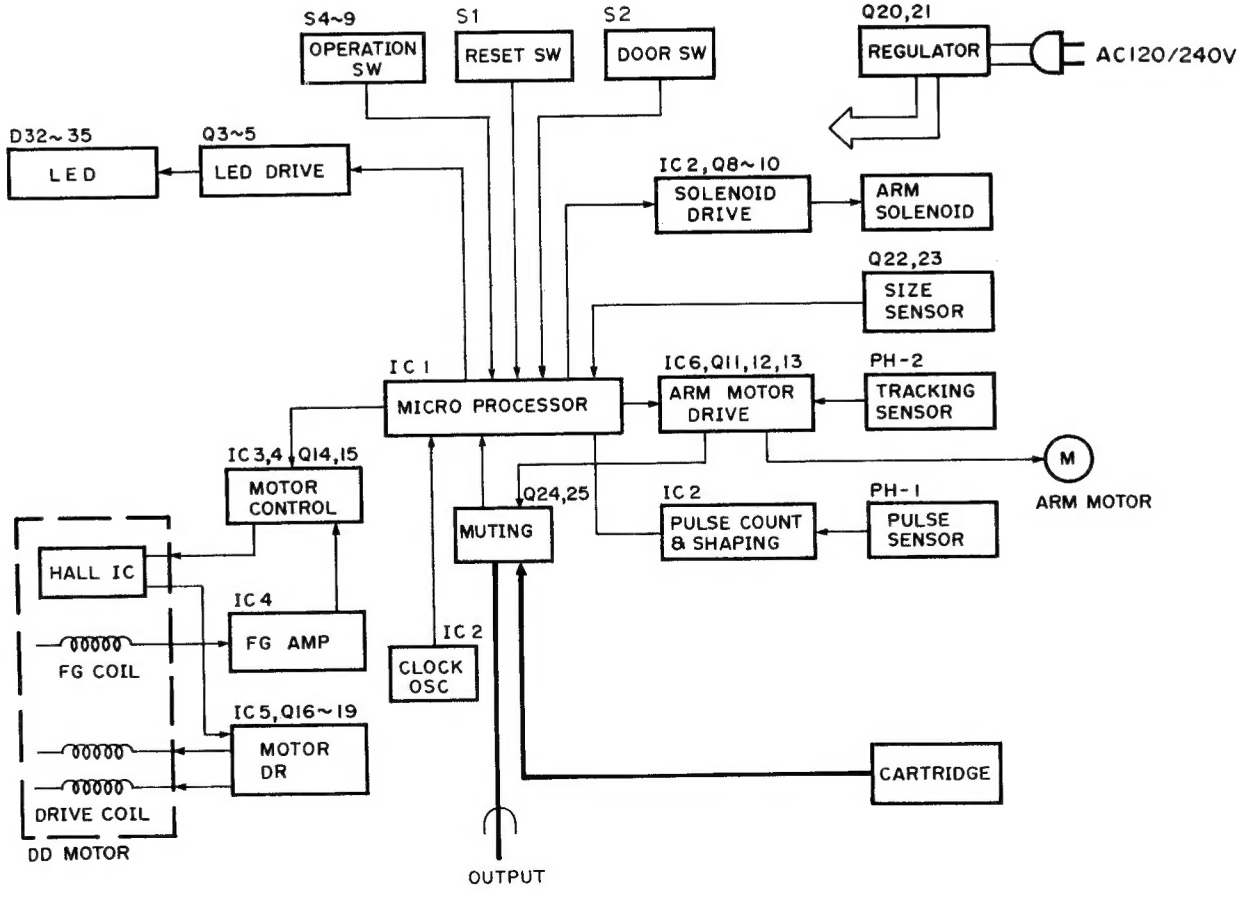
CORD STRINGING/BLOCK DIAGRAM

CORD STRINGING

1. Hook the loop of the cord to the holder (①).
2. Hook the cord to the pulley (②), and then move it in the direction of the arrow ③ to hook to the pulley (④).
3. Wind the cord 3 turns around the arm drive gear (⑤, ⑥) and hook the spring to the hook of the holder.



BLOCK DIAGRAM



CIRCUIT DESCRIPTION

SEMICONDUCTOR'S FUNCTION TABLE

Semi-conductors	Application and function	Operation and conditions
Q3	Quartz lock indicator driver	Goes into conduction by quartz lock signals of 33-1/3 and 45 rpm from IC3. Lights LED (D35).
Q4	33 rpm display driver	Goes into conduction when power switch is ON. Pin 15 of microcomputer (IC1) goes low.
Q5	45 rpm display driver	When speed select switch (S4) is depressed after power switch is turned on (Q4 conducts), Q5 goes into conduction, lighting LED (D33). Pin 15 of microcomputer (IC1) goes high.
Q7	Microcomputer power ON/OFF reset	Becomes nonconductive for 10 to 20 msec when power switch is turned on and off, resetting microcomputer.
Q8	Solenoid kick drive transistor control for arm up/down	Goes into conduction the moment muting is released, shortcircuiting between base and emitter of kick driver (Q9) to turn off the kick.
Q9	Solenoid kick driver for arm up/down	Driver for solenoid kick. Kick is switched on while Q9 is in conduction.
Q10	Solenoid driver for arm up/down	Goes into conduction and turns on solenoid by means of arm down signal at pin 2 of microcomputer (IC1).
Q11	For arm malfunction prevention	So that arm does not move by the output from the tracking sensor during arm up, Q11 short-circuits tracking sensor output.
Q12	Arm feed motor driver	Goes into conduction when arm reverse operates.
Q13	Arm feed motor driver	Goes into conduction when arm forward operates.
Q14	Turntable ON/OFF control	Controls rotation of turntable by means of signal at pin 8 of microcomputer (IC1). Turntable rotates when Q14 is in conduction.
Q15	Turntable motor Hall device driver	Controls current passing through Hall device.
Q16, 17, 18, 19	DD motor drivers for turntable	Controls current passing through DD motor drive coil.
Q20, 21	Constant voltage power-supply	Controls constant voltage power supply by means of Darlington connection.
Q22	Record size detection	Size detection phototransistor (for 30 cm disc)
Q23	Record size detection	Size detection phototransistor (for 17 cm disc)
Q24,	Muting control	Controls muting relay. Turns off muting when Q24 is in conduction.
Q25	Muting level detection	Detects tracking error voltage, then sends muting clear signal to microcomputer.
Q26	Microcomputer interface	Interfaces muting clear signal with microcomputer.
Q27	Microcomputer interface	Interfaces rest signal with microcomputer.
IC1	Microcomputer	
IC2	Pulse count waveform shaper	Pins 1 to 4. Schmitt trigger using two inverters.
	Muting signal	Pins 5 and 6.
	Microcomputer lock oscillator	Pins 8 to 11. Oscillating frequency is 400 kHz.
IC3	DD motor control	Quartz lock system
IC4	FG amp	Pins 1 to 3.
	Hall device control	Pins 5 to 7.
IC5	DD motor drive coil control	
IC6	Arm drive control	Pins 1 to 3.
	Tracking sensor amp	Pins 5 to 7.

ADJUSTMENT

Adjustment

Adjusting tonearm tracking bias

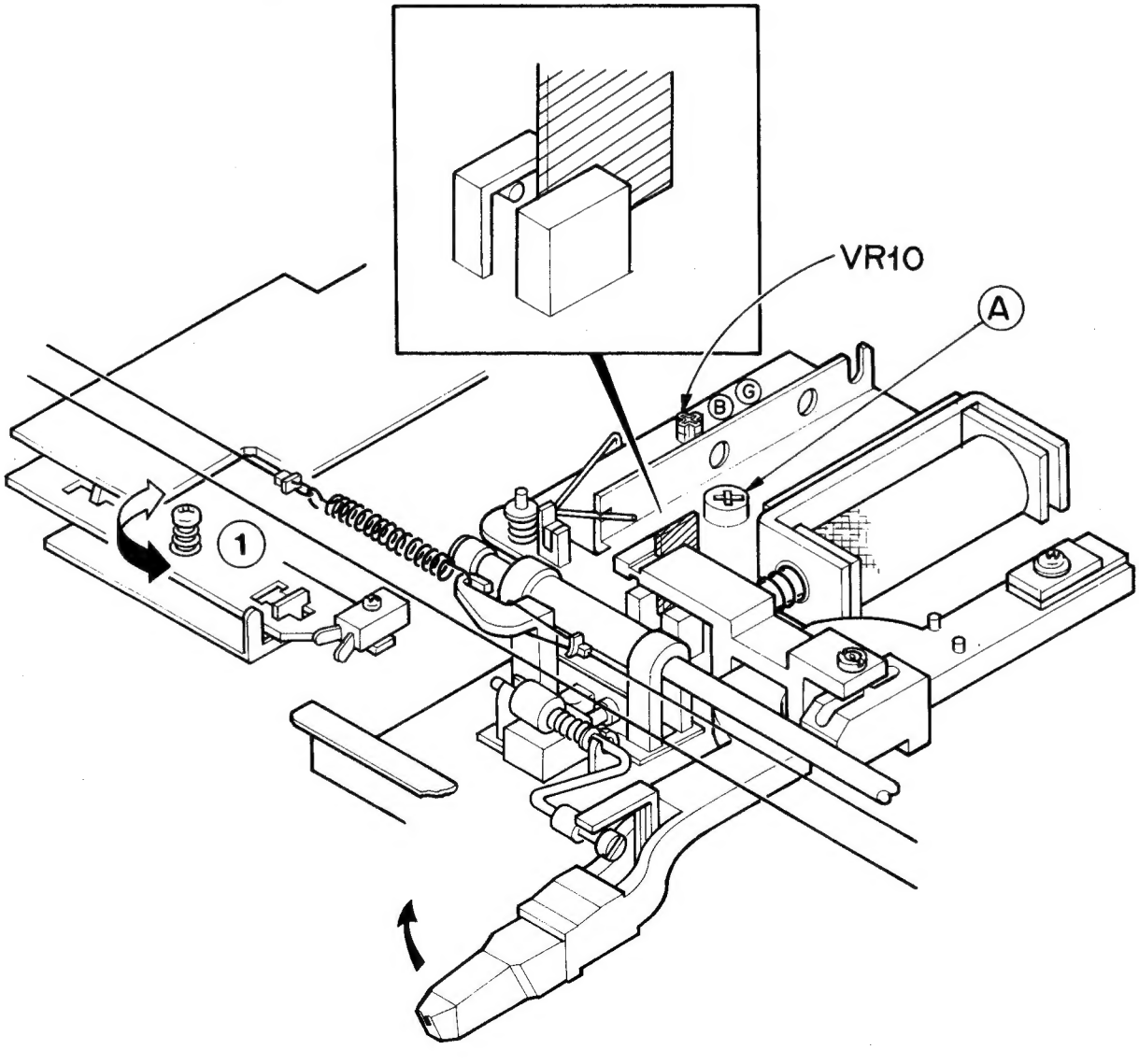
1. Remove 3 hexagon socket head bolts and the dust cover ass'y (refer to exploded view, No. 54).
2. Connect a DC voltmeter to Ⓑ and Ⓖ terminals in the tonearm ass'y.
3. Swing the tonearm ass'y to the left. (Take care not to damage the stopper.)
4. Turn VR10 in tonearm ass'y so that the voltmeter reads 1.5 ~ 1.8V. Then, move the tonearm ass'y to the center so that the shutter inserted halfway between the photo interrupter. If the shutter is in the right position, the voltmeter should read 0.5 ± 0.3V (The position of the shutter can be adjusted with screw Ⓐ. When the screw is turned, secure it with adhesive.)

Adjusting control PC board (refer to the PC board diagram)

1. Short circuit Ⓑ and Ⓒ terminals of X25-2080-11 and connect a DC voltmeter between Ⓐ and Ⓒ terminals.
2. Adjust VR5 so that the DC voltmeter reads 2.5V.

Adjusting auto-in position

1. Turn screw ① to adjust auto-in position. When the screw is turned clockwise, the auto-in position moves to the right. When the screw is turned counterclockwise, the auto-in position moves to the left.
2. When using a test record (W05-0036-00) to adjust the auto-in position, adjust so the auto-in position is within 5 ~ 30 counts of the side Ⓑ.



REGLAGES/ABGLEICH

Réglages

Réglages du differentiel de lecture du bras

1. Retirer les 3 vis à 6 pans et l'ensemble du capot protecteur (se reporter au exploded view N° 54).
2. Relier un voltmètre CC aux bornes Ⓑ et Ⓖ de l'ensemble du bras.
3. Agiter le bras vers la gauche, en prenant soin de ne pas endommager la butée.
4. Agir sur VR10 (sur l'ensemble de lecture) de manière à lire 1,5 ~ 1,8V sur le voltmètre CC. Puis déplacer l'ensemble de lecture vers le centre de manière que l'obturateur soit inséré à mi-chemin d'entre l'interrupteur lumineux. Si l'obturateur se trouve dans la position correcte, le voltmètre doit afficher 0,5 ± 0,3V. (On peut régler la position de l'obturateur avec la vis Ⓐ. Si l'on agit sur cette vis, la fixer ensuite avec de la colle.)

Réglage du circuit imprimé de commande (se reporter au schéma de celui-ci)

1. Court-circuiter les bornes Ⓑ et Ⓒ de X25-2080-11 et brancher un voltmètre CC entre les bornes Ⓐ et Ⓒ.
2. Agir sur VR5 de manière à obtenir 2,5V au voltmètre.

Réglage de la position de départ pour l'automatisme

1. Rour régler la position de pose du bras, tourner la vis ①. Si l'on tourne dans le sens des aiguilles d'une montre, la position se décale vers la droite; si l'on tourne dans le sens inverse, la position se décale vers la gauche.
2. Si l'on se sert d'un disque test (W05-0036-00) pour ce réglage, déterminer la position pour qu'elle se situe entre le nombre 5 et le nombre 30 de la face Ⓑ.

Einstellung

Einstellung der Spurhaltung-Vorspannung des Tonarms

1. Die 3 Innensechskantschrauben und die Abdeckhaube entfernen (siehe Exploded view Nr. 54 auf Seite 6.).
2. Einen Gleichstrom-Spannungsmesser an die Klemmen Ⓑ und Ⓖ des Tonarms anschließen.
3. Den Tonarm nach links schwingen. (Darauf achten, den Anschlag nicht zu beschädigen.)
4. Den VR10 des Tonarms so einstellen, daß der Voltmeter 1,5 bis 1,8V anzeigt. Dann den Tonarm zu Mitte so bewegen, daß der Verschluß halbwegs eingesetzt zwischen dem Photounterbrecher wird. Wenn der Verschluß sich auf den richtigen Positionen stellt, soll der Gleichstrom-Spannungsmesser 0,5 ± 0,3V anzeigen. (Die Position des Verschlusses kann mit der Schraube Ⓐ eingestellt werden. Wenn die Schraube gedreht wird, hinterher mit einem Klebemittel sichern.)

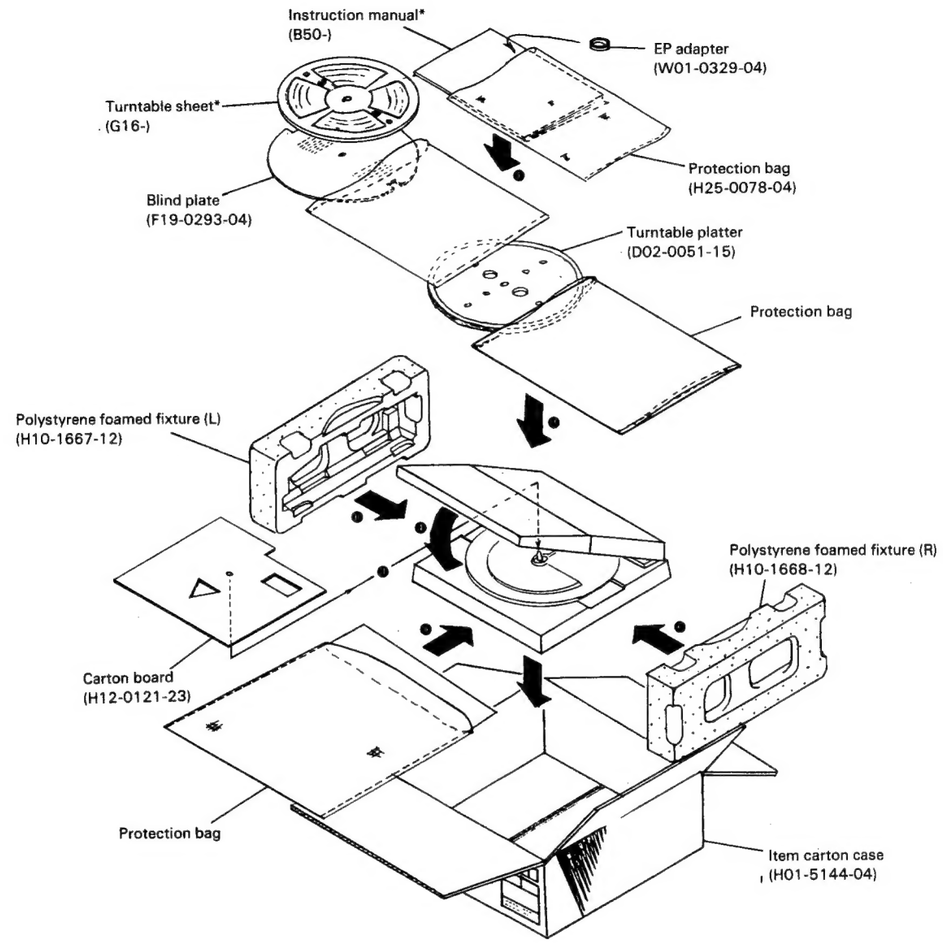
Einstellung der Steuer-Schaltplatte (siehe das Schaltplatten-Diagramm)

1. Die Klemmen Ⓑ und Ⓒ von X25-2080-11 kurzschließen und einen Gleichstrom-Spannungsmesser zwischen die Klemmen Ⓐ und Ⓒ anschließen.
2. VR5 so einstellen, daß der Gleichstrom-Spannungsmesser 2,5V anzeigt.

Einstellung der Position der automatischen Aufsetzen

1. Die automatische Aufsetzen-Position wird mit Schraube ① eingestellt. Wenn die Schraube in Uhrzeigerrichtung gedreht wird, bewegt sich die automatische Aufsetzen nach rechts. Wenn die Schraube in Gegenuhrzeigerrichtung gedreht wird, bewegt sich die automatische Aufsetzen nach links.
2. Wenn zur Einstellung der automatischen Aufsetzen die Testschallplatte (W05-0036-00) verwendet wird, die automatische Aufsetzen so einstellen, daß sie sich innerhalb von 5 bis 30 Zählimpulsen auf Seite Ⓑ befindet.

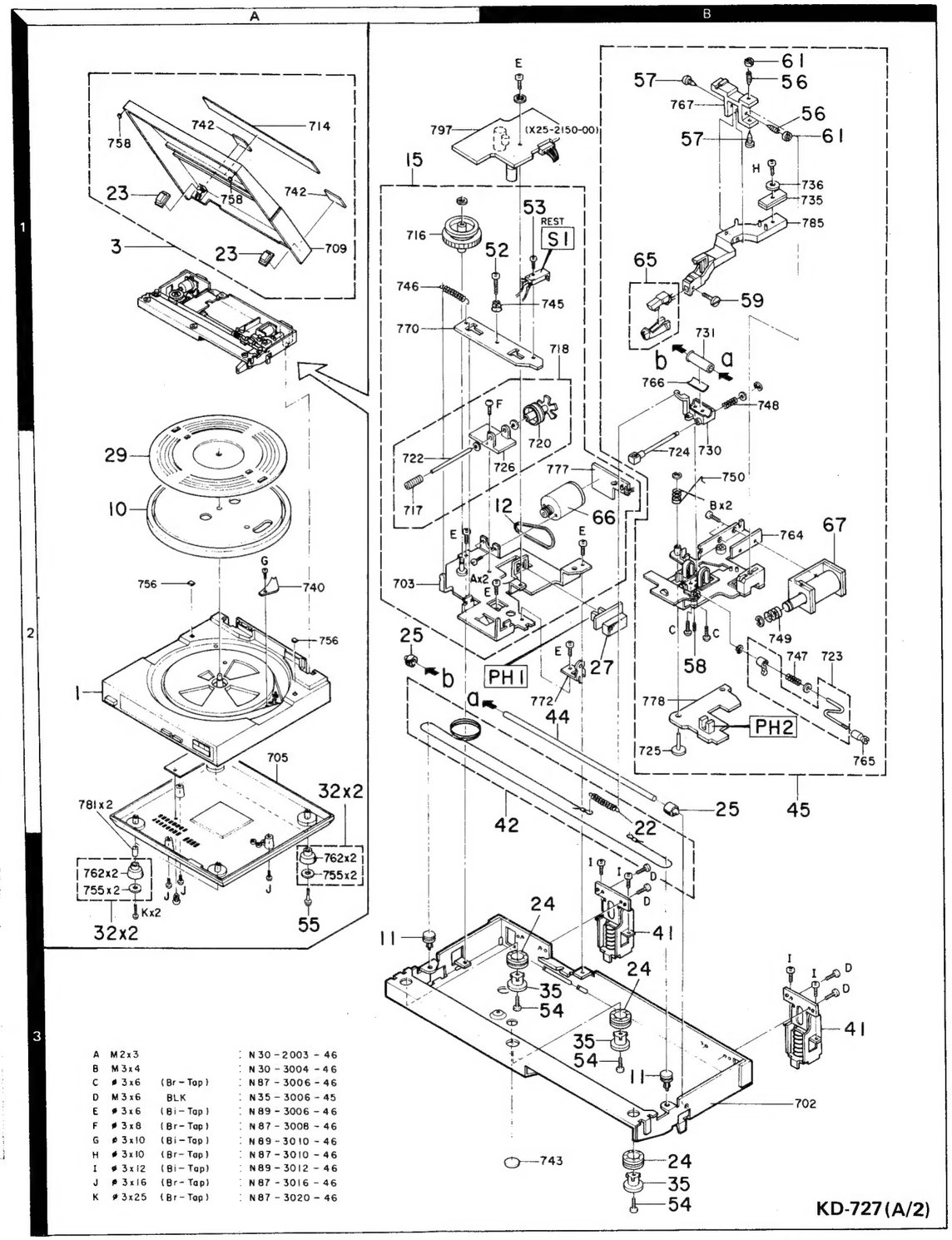
PACKING



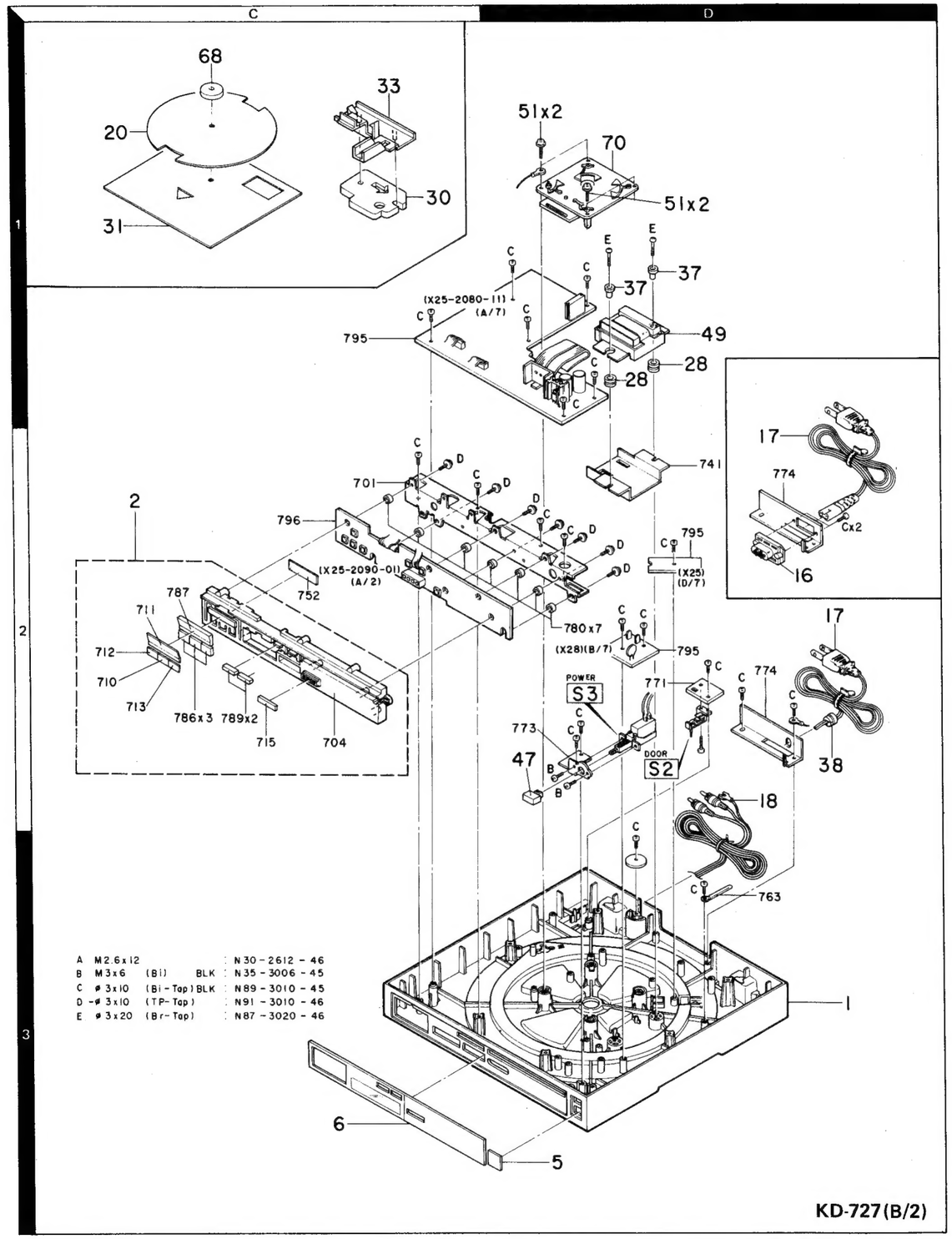
Note: Be sure to stabilize the tonearm with the arm fixture holder during transport.
To stabilize the tonearm, do the following:

1. Move the tonearm to the midway position by pushing the ▷ button.
2. Insert the arm fixture holder between the tonearm and the tonearm holder.
3. Manually move it to the furthest right position.

EXPLODED VIEW



KD-727(A/2)



KD-727(B/2)

Parts with the exploded numbers larger than 700 are not supplied.

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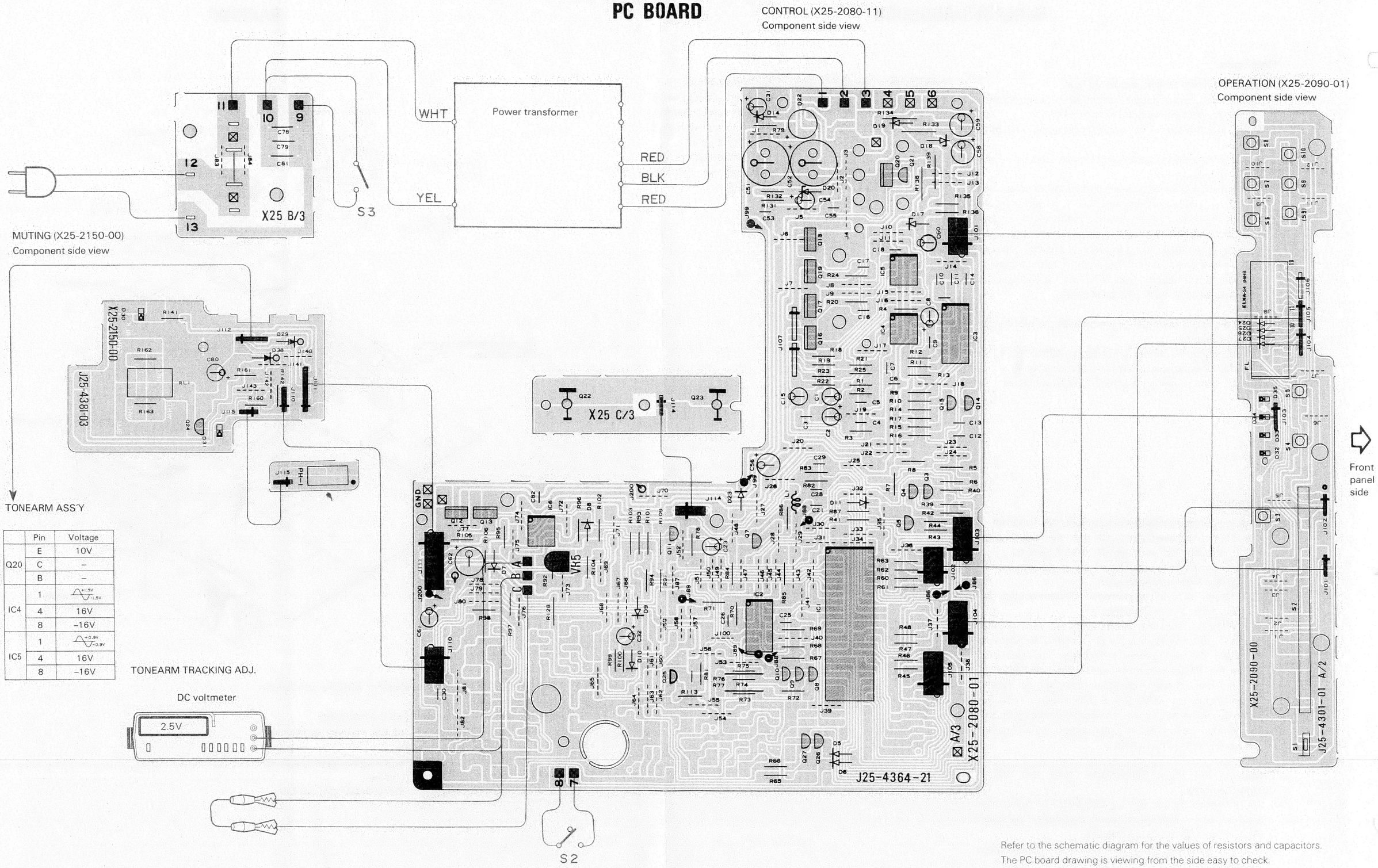
PC BOARD



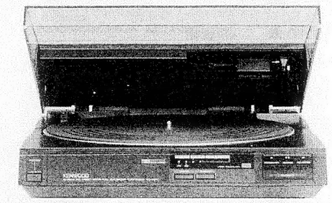
	Pin	Voltage
Q20	E	10V
	C	–
	B	–
IC4	1	+1.5V / −1.5V
	4	16V
	8	−16V
IC5	1	+0.9V / −0.9V
	4	16V
	8	−16V

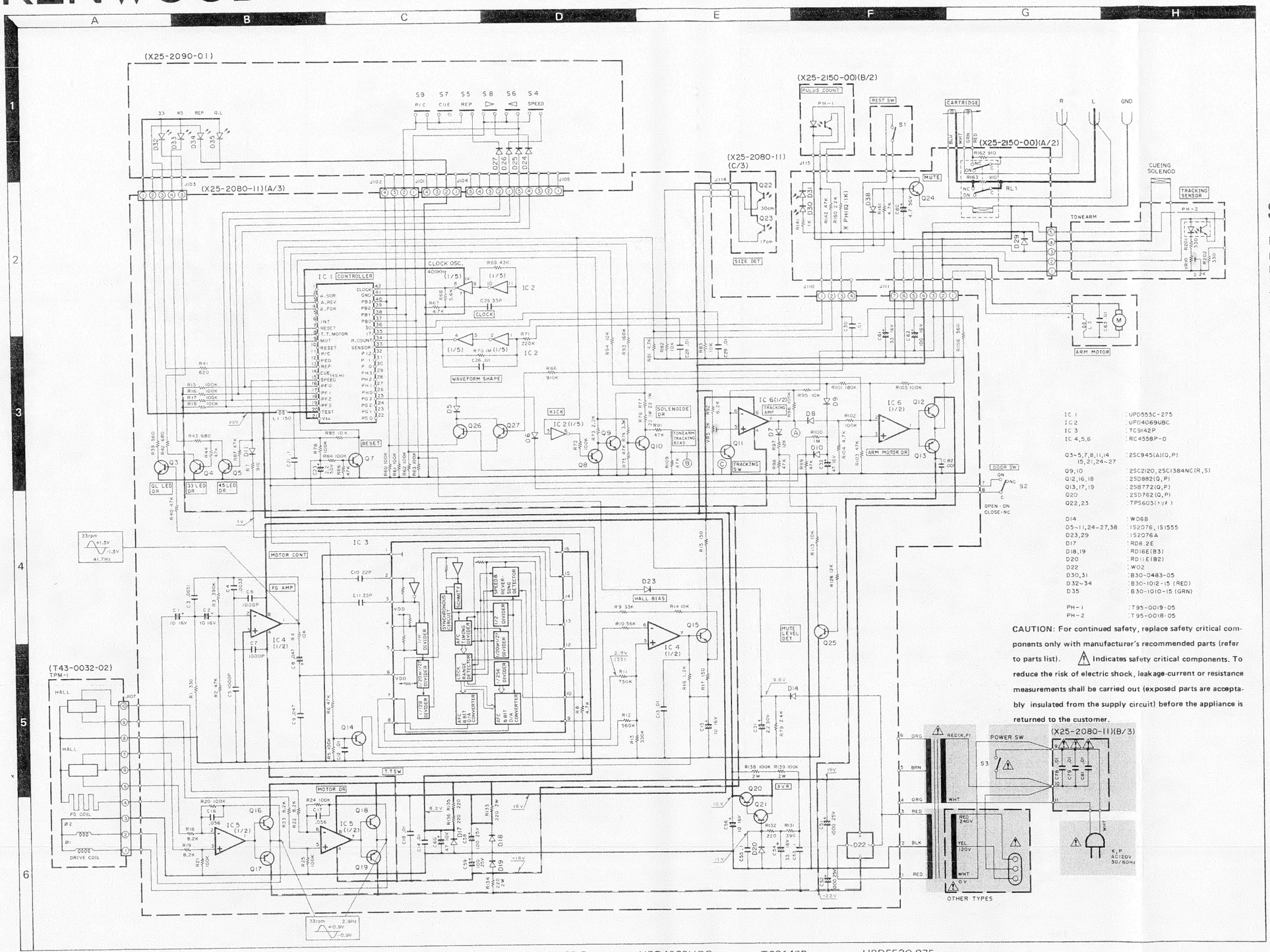
Refer to the schematic diagram for the values of resistors and capacitors.
The PC board drawing is viewing from the side easy to check.

KENWOOD

FULL AUTOMATIC TURNTABLE

KD-727





IC 1	: UPD553C-275
IC 2	: UPD4069UBC
IC 3	: TC9142P
IC 4,5,6	: RC4558P-D
Q3-5,7,8,11,14 15,21,24-27	: 2SC945(A)(Q,P)
Q9,10	: 2SC2120, 2SC1384NC(R,S)
Q12,16,18	: 2SD882(Q,P)
Q13,17,19	: 2SB772(Q,P)
Q20	: 2SD762(Q,P)
Q22,23	: TPS603(H)(Y)
D14	: W06B
D5-11,24-27,38	: 1S2076, 1S1555
D23,29	: 1S2076A
D17	: RD8.2E
D18,19	: RD16E(B3)
D20	: RD11E(B2)
D22	: W02
D30,31	: B30-0483-05
D32-34	: B30-1012-15 (RED)
D35	: B30-1010-15 (GRN)
PH-1	: T95-0019-05
PH-2	: T95-0018-05

CAUTION: For continued safety, replace safety critical components only with manufacturer's recommended parts (refer to parts list). ⚠ Indicates safety critical components. To reduce the risk of electric shock, leakage-current or resistance measurements shall be carried out (exposed parts are acceptably insulated from the supply circuit) before the appliance is returned to the customer.

Specifications

Motor and turntable

Drive System	Quarts PLL Direct Drive
Motor	Coreless & Slotless DC Servo Motor
Turntable Platter	30.0 cm (12") Diameter
Speeds	2 Speeds, 33-1/3 and 45 rpm.
Wow & Flutter	Less than 0.025% (WRMS) Less than ±0.05% (DIN)
Rumble	DIN weighted better than 74 dB

Tonearm

Type	Static-Balanced Linear Tracking Tonearm
Stylus Pressure	1.25 grams (Fixed)
Usable Cartridge	T4P Type
Output Capacity	170 pF (Headshell to Output)
Dynamic Compliance	7×10^{-6} cm/dyne (with Furnished Cartridge as V-57)

Cartridge (except U.S.A.)

Furnished Cartridge	V-57 (Low Output Dual Moving Coil Type)
Stylus	N-57 with 0.6 mil Diamond
Frequency Response	20 Hz to 20,000 Hz
Output Voltage	0.3 mV (1,000 Hz, 5.0 cm/sec.)
Optimum Tracking Force	1.25 ± 0.25 grams
Load Impedance	100 ohms
Replacement Stylus	N-57

Supplied accessory	45 rpm Adaptor × 1 Auto size selector malfunction prevention sheet × 1

Miscellaneous

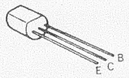
Power Requirements	AC 120 V, 60 Hz...U.S.A. & Canada Models AC 120 V/220-240V, 50/60 Hz...Others
Power Consumption	15 watts
Dimensions	W 340 mm (13-13/32") H 108 mm (4-11/32") D 345 mm (13-19/32")
Weight (Net)	5.9 kg (13.0 lb)

Kenwood follows a policy of continuous advancements in development. For this reason specifications may be changed without notice.

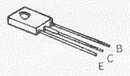
Kenwood poursuit une politique de progrès constants en ce qui doncerne le développement. Pour cette raison, les spécifications sont sujettes à modifications sans préavis.

Kenwood strebt ständige, Verbesserungen in der Entwicklung an. Daher bleiben Änderungen der technischen Daten jederzeit vorbehalten.

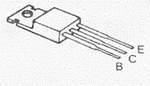
2SC1384NC
2SC2120
2SC945(A)



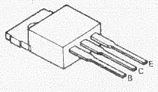
2SB772
2SD882



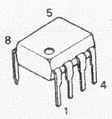
2SD762



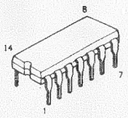
2SC2167



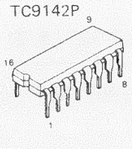
RC4558P-D



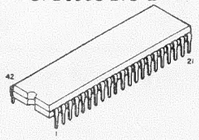
UPD4069UBC



TC9142P



UPD553C-275



DC voltages are as measured with a high impedance voltmeter at 33-1/3 r.p.m. mode. Values may vary slightly due to variations between individual instruments or/and units.

PARTS LIST

* New Parts
Parts without **Parts No.** are not supplied.
Les articles non mentionnes dans le **Parts No.** ne sont pas fournis
Teile ohne **Parts No.** werden nicht geliefert.

Ref. No. 参照番号	Address 位置	New Parts 新	Parts No. 部品番号	Description 部品名／規格	Destination 仕向	Remarks 備考
			KD-727			
1	2A,3D	*	A02-0175-01	TURNTABLE CABINET		
2	2C	*	A22-0442-03	SUB PANEL ASSY(OPERATION)		
3	1A	*	A53-0558-02	DUST COVER ASSY		
5	3D	*	B03-1361-04	DRESSING PLATE(POWER)		
6	3C	*	B03-1419-02	DRESSING PLATE		
-			B46-0092-03	WARRANTY CARD	K	
-			B46-0093-03	WARRANTY CARD	P	
-			B46-0094-03	WARRANTY CARD	UUE	
-			B46-0095-03	WARRANTY CARD	UUE	
-			B46-0096-03	WARRANTY CARD	X	
-			B46-0098-03	WARRANTY CARD	E	
-		*	B50-5209-00	INSTRUCTION MANUAL(ENGLISH)		
-		*	B50-5210-00	INSTRUCTION MANUAL(FRENCH)	PMXE	
-		*	B50-5211-00	INSTRUCTION MANUAL(G,D,I)	E	
-		*	B50-5212-00	INSTRUCTION MANUAL(SPANISH)	M	
-			B58-0223-04	CAUTION CARD(PRESET,120V)	U	
-			B58-0269-04	CAUTION CARD	P	
-		*	B58-0314-04	CAUTION CARD	K	
-			B58-0513-04	CAUTION CARD(PRESET220-240)	UE	
-			B59-0092-00	SERVICE DIRECTORY	UUE	
C63			CK45FF1H103Z	CERAMIC 0.01UF Z		
10	2A		D02-0051-15	TURNTABLE PLATTER		
11	3A,3B		D15-0175-15	PULLEY ASSY(DIAL CORD STRING)		
12	2B		D16-0082-04	BELT (MOTOR,PULLEY)		
15	1A	*	D40-0308-03	MECHANISM ASSY(T.ARM TRANSPORT		
⚠ 16	2D		E03-0102-15	AC INLET	UMUEX	
⚠ 16	2D		E03-0102-15	AC INLET	E	
⚠ 17	2D		E30-0181-05	AC POWER CORD	P	
⚠ 17	2D		E30-1305-15	AC POWER CORD (INLET)	UMUE	
⚠ 17	2D		E30-1329-05	AC POWER CORD (INLET)	E	
⚠ 17	2D		E30-1342-05	AC POWER CORD (INLET)	X	
⚠ 17	2D		E30-1350-05	AC POWER CORD	K	
⚠ 18	2D		E30-1352-25	AUDIO CORD		
20	1C		F19-0294-04	BLIND PLATE(TURNTABLE PLATTER)		
22	2B		G01-1371-04	EXTENSION SPRING(T.ARM STRING)		
23	1A		G11-1032-14	CUSHION (A53-0558-02ASSY)		
24	3B		G11-1033-14	CUSHION (UNDER DUST COVER)		
25	2A,2B		G11-1034-04	CUSHION (ENDS OF TONEARM RAIL)		
27	2B		G13-0142-04	CUSHION		
28	1D		G13-0414-04	CUSHION (POWER TRANSFORMER)		
29	2A		G16-0067-02	TURNTABLE SHEET	PUMUE	
29	2A		G16-0067-02	TURNTABLE SHEET	XE	
29	2A		G16-0068-02	TURNTABLE SHEET	K	
30	1C		H10-1681-14	POLYSTYRENE FOAMED FIXTURE		
31	1C		H12-0121-23	CARTON BOARD		
-		*	H01-5144-04	ITEM CARTON CASE		
-			H10-1667-12	POLYSTYRENE FOAMED FIXTURE(L)		
-			H10-1668-12	POLYSTYRENE FOAMED FIXTURE(R)		
-			H25-0078-04	PROTECTION BAG (235X315)		
-			H25-0148-04	PROTECTION BAG (110X230X0.07)	M	

E: Scandinavia & Europe H:Audio Club K: USA P: Canada ⚠ indicates safety critical components.
S: South Africa T: England U: PX(Far East, Hawaii)
UE: AAFES(Europe) X: Australia M: Other Areas

PARTS LIST

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Ref. No. 参照番号	Address 位置	New Parts 新	Parts No. 部品番号	Description 部品名／規格	Destination 仕向	Remarks 備考
-			H25-0210-24	PROTECTION BAG		
-			H40-0005-04	RUST PREVENTING PAPER(380X250)	M	
32	2A,3A		J02-0151-14	INSULATOR ASSY		
33	1C	*	J19-2126-03	HOLDER (TONEARM)		
35	3B		J31-0205-14	COLLAR (TONEARM MECH MOUNT)		
37	1D		J31-0416-14	COLLAR (POWER TRANSFORMER)		
⚠ 38	2D		J41-0034-05	POWER CORD BUSHING	KP	
41	3B		J50-0101-05	HINGE		
42	2B		J60-0005-14	STRING ASSY		
44	2B		J90-0119-04	RAIL (TONEARM)		
45	2B	*	J91-0224-25	TONEARM ASSY	PUMUE	
45	2B	*	J91-0224-25	TONEARM ASSY	XE	
45	2B	*	J91-0242-05	TONEARM ASSY	K	
-			J61-0045-15	WIRE BAND		
-			J61-0307-05	WIRE BAND		
47	2D		K27-1207-04	KNOB(BUTTON) POWER		
⚠ 49	1D	*	L01-3101-05	POWER TRANSFORMER	KP	
⚠ 49	1D	*	L01-3104-05	POWER TRANSFORMER	UMUEX	
⚠ 49	1D	*	L01-3104-05	POWER TRANSFORMER	E	
L3			L40-1511-14	SMALL FIXED INDUCTOR(150UH,K)		
51	1D		N09-0849-05	TAPTITE SCREW (M3X15,+TP)		
52	1B		N09-0966-04	MACHINE SCREW (M3X14,+PAN)		
53	1B		N09-0993-04	MACHINE SCREW (M1.7X6,PAN)		
54	3B		N09-1222-05	HEXAGON SOCKET HEAD BOLT(M3X8)		
55	3A		N09-1261-15	STEPPED SCREW (ø3X31)		
56	1B		N09-1267-08	SET SCREW (TONEARM)		
57	1B		N09-1278-08	SET SCREW (TONEARM)		
58	2B		N09-1291-05	SET SCREW (M3X6,-)		
59	1B	*	N09-1343-08	MACHINE SCREW(CARTRIDGE)		
61	1B		N14-0136-08	CIRCULAR NUT (N09-1267-08FIX)		
VR10			R12-1063-05	TRIMMING POT(2.2K) TRACK ERROR		
S1	1B		S50-1316-05	MICRO SWITCH (REST POSITION)		
S2	2D		S46-2310-05	LEAF SWITCH (DOOR)		
⚠ S3	2D		S40-1076-05	PUSH SWITCH (POWER TYPE)		
65	1B		T21-0105-05	PICKUP CARTRIDGE	PUMUE	
65	1B		T21-0105-05	PICKUP CARTRIDGE	XE	
65	1B	*	T21-0115-05	PICKUP CARTRIDGE	K	
66	2B		T42-0039-05	MOTOR ASSY		
67	2B		T94-0030-08	MAGNETIC PLUNGER		
PH2	2B		T95-0018-05	OPTO ISOLATOR (TRACKING)		
68	1C		W01-0329-04	EP ADAPTER		
70	1D		X92-1010-00	MOTOR ASSY (TPM-1A)		

ELECTRIC (X25-2080-11)

C1 ,2			CE04FW1C100M	ELECTRO	10UF	16WV		
C3		*	CF92FV1H512J	MF	5100PF	J		
C4			CF92FV1H332J	MF	3300PF	J		
C5 -7			CK45FB1H102K	CERAMIC	0.001UF	K		
C8			CE04FW1HR47M	ELECTRO	0.47UF	50WV		
C9			CK45FF1H473Z	CERAMIC	0.047UF	Z		
C10 ,11			CC45FSL1H220J	CERAMIC	22PF	J		

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PARTS LIST

* New Parts
Parts without **Parts No.** are not supplied
Les articles non mentionnes dans le **Parts No.** ne sont pas fournis
Teile ohne **Parts No.** werden nicht geliefert

Ref. No. 参照番号	Address 位置	New Parts 新	Parts No. 部品番号	Description 部品名／規格	Destination 仕向	Remarks 備考
C12 -14			CK45FF1H103Z	CERAMIC 0.01UF Z		
C15			CE04FW1C100M	ELECTRO 10UF 16WV		
C16 ,17			CF92FV1H563J	MF 0.056UF J		
C18			CK45FF1H103Z	CERAMIC 0.01UF Z		
C21			C91-0700-05	CERAMIC 0.1UF J		
C23			CE04FW1H2R2M	ELECTRO 2.2UF 50WV		
C25			CC45FSL1H330J	CERAMIC 33PF J		
C26			CK45FF1H103Z	CERAMIC 0.01UF Z		
C28 -30			CK45FF1H103Z	CERAMIC 0.01UF Z		
C31			CE04FW1H2R2M	ELECTRO 2.2UF 50WV		
C32			CE04FW1C470M	ELECTRO 47UF 16WV		
C51 ,52			CE04W1E102M	ELECTRO 1000UF 25WV		
C53			C91-0700-05	CERAMIC 0.1UF J		
C54			CE04FW1C330M	ELECTRO 33UF 16WV		
C55			C91-0700-05	CERAMIC 0.1UF J		
C56			CE04FW1C100M	ELECTRO 10UF 16WV		
C58 ,59			CE04FW1E101M	ELECTRO 100UF 25WV		
C60			CE04FW1A470M	ELECTRO 47UF 10WV		
C61			CE04FW1C330M	ELECTRO 33UF 16WV		
C62			CE04FW1C101M	ELECTRO 100UF 16WV		
⚠ C78 ,79			C91-0023-05	CERAMIC 0.01UF AC250V	UMUEX	
⚠ C78 ,79			C91-0023-05	CERAMIC 0.01UF AC250V	E	
⚠ C78 ,79			C91-0647-05	CERAMIC 0.01UF P	KP	
⚠ C81			C91-0023-05	CERAMIC 0.01UF AC250V	UMUEX	
⚠ C81			C91-0023-05	CERAMIC 0.01UF AC250V	E	
⚠ C81			C91-0647-05	CERAMIC 0.01UF P	KP	
C82			CK45B1H102K	CERAMIC 0.001UF K		
L1			L40-1511-14	SMALL FIXED INDUCTOR (150UH,K)		
X1			L77-0580-05	CRYSTAL RESONATOR (4.6MHZ)		
R76 ,77			RS14GB3A220J	FL-PROOF RS 22 J 1W		
R133,134		*	RS14KB3D221J	FL-PROOF RS 220 J 2W		
R138,139			RS14KB3D101J	FL-PROOF RS 100 J 2W		
VR5			R12-1313-05	TRIMMING POT(2K) TRACK BIAS		
D5 -11			1S1555	DIODE		
D5 -11			1S2076	DIODE		
D14			W06B	DIODE		
D17			RD8.2E(B2)	ZENER DIODE		
D18 ,19			RD16E(B3)	ZENER DIODE		
D20			RD11E(B2)	ZENER DIODE		
D22			W02	DIODE		
D23			1S2076A	DIODE		
IC1			UPD553C-275	IC MICROPROCESSOR		
IC2			UPD4069UBC	IC INVERTER		
IC3			TC9142P	IC MOTOR CONTROL		
IC4 -6			RC4558P-D	IC OP AMP		
Q3 -5			2SC945(A)(Q,P)	TRANSISTOR		
Q7 ,8			2SC945(A)(Q,P)	TRANSISTOR		
Q9 ,10			2SC1384NC(R,S)	TRANSISTOR		
Q9 ,10			2SC2120	TRANSISTOR O,Y		
Q11			2SC945(A)(Q,P)	TRANSISTOR		
Q12			2SD882(Q,P)	TRANSISTOR		
Q13			2SB772(Q,P)	TRANSISTOR		
Q14 ,15			2SC945(A)(Q,P)	TRANSISTOR		

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KD-727

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Q16			2SD882(Q,P)	TRANSISTOR		
Q17			2SB772(Q,P)	TRANSISTOR		
Q18			2SD882(Q,P)	TRANSISTOR		
Q19			2SB772(Q,P)	TRANSISTOR		
Q20			2SC2167(Q,Y)	TRANSISTOR		
Q20			2SD762(Q,P)	TRANSISTOR		
Q21			2SC945(A)(Q,P)	TRANSISTOR		
Q22 ,23			TPS605	PHOTO TR (RECORD SIZE DETECT)		
Q25 -27			2SC945(A)(Q,P)	TRANSISTOR		
OPERATION (X25-2090-01)						
D32 -34			B30-1012-05	LED(SLP-981C-50) 33,45,REPEAT		
D35		*	B30-1010-05	LED(SLP-281F-50U) QUARTZ LOCK		
S4 -9			S40-1068-05	PUSH SWITCH(SP,REP,FOR,CUE,REV		
D24 -27			1S2076	DIODE		
SUB-CIRCUIT (X25-2150-00)						
D30 ,31			B30-0483-05	LED(SLP-170B) RECORD SIZE DET		
C80			CE04W1E4R7M	ELECTRO 4.7UF 25WV		
PL1		*	S51-2068-05	MAGNETIC RELAY		
PH1			T95-0019-05	OPTO ISOLATOR (PULSE COUNT)		
D29			1S2076A	DIODE		
D38			1S1555	DIODE		
D38			1S2076	DIODE		
Q24			2SC945(A)(Q,P)	TRANSISTOR		
MOTOR ASSY (X92-1010-00)						
-			D90-0001-04	STEEL BALL		
-		*	T95-0015-15	HALL ELEMENT (H-300B)		

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Note:
Component and circuitry are subject to modification to insure best operation under differing local conditions. This manual is based on, the U.S. (K) standard, and provides information on regional circuit modification through use of alternate schematic diagrams, and information on regional component variations through use of parts list.

TRIO-KENWOOD CORPORATION
Shionogi Shibuya Building, 17-5, 2-chome Shibuya, Shibuya-ku, Tokyo 150, Japan

KENWOOD ELECTRONICS
1315 E. Watsoncenter Rd, Carson, California 90745, U.S.A.
75 Seaview Drive, Secaucus, New Jersey 07094, U.S.A.

TRIO-KENWOOD CANADA INC.
1070 Jayson Court, Mississauga, Ontario, Canada L4W 2V5

TRIO-KENWOOD ELECTRONICS, N.V.
Leuvensesteenweg 504 B-1930 Zaventem, Belgium

TRIO-KENWOOD ELECTRONICS GmbH
Rudolf-Brass-Str. 20, 6056 Heusenstamm, West Germany

TRIO-KENWOOD FRANCE S.A.
5, Boulevard Ney, 75018 Paris, France

TRIO-KENWOOD (AUSTRALIA) PTY. LTD. (INCORPORATED IN N.S.W.)
4E Woodcock Place, Lane Cove, N.S.W. 2066, Australia

KENWOOD & LEE ELECTRONICS, LTD.
Wang Kee Building, 5th Floor, 34-37, Connaught Road, Central, Hong Kong

 B51-1620-00 (G) 2575